UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
OFFICE OF OCEANIC AND ATMOSPHERIC RESEARCH
1315 East-West Highway
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DEC 21 2001

MEMORANDUM FOR: Randall Dole
Director, Climate Diagnostics Center

FROM: David L. Evans

Subject: Summary and Action Items Resulting from the July 25-26, 2001 CDC Review

Thank you for the hard work you and your staff invested in preparing for the quadrennial review of the Climate Diagnostics Center on July 25-26, 2001. I have heard from both the reviewers and my staff that CDC was a gracious host and that you are to be commended for putting together a detailed and comprehensive program. I understand that the review document you put together was of such high quality, Dr. David Battisti of our Joint Institute for the Study of the Atmosphere and Oceans will make it required reading for his students this year.

I have received the comments from each of the four reviewers. This memorandum highlights key issues raised by the reviewers and outlines the response I am requesting from CDC.

Progress Made in Recent Years

First, every reviewer states great praise for the management style of the director, the high morale and productivity of the employees, the substantial contribution CDC is making, and the scientific potential CDC has to offer. I recognize that CDC has enhanced its presence in NOAA Research since its formation in 1993 and that it has positioned itself to take on a larger role in shaping future climate research and services in NOAA. While the focus of the center has been on the seasonal-to-interannual problem, CDC's efforts in recent years to both link more closely with the operational side of NOAA, as well as look toward decadal to centennial time scales, have contributed to this broadened scope.

CDC's Status

The general view of the panel is that CDC is poised to play a richer role in NOAA's climate research efforts and they recommend elevating the center's standing in NOAA and the climate community. However, there is unanimous opinion among the reviewers that the term "Center" is problematic for CDC's image. The panel recommends that CDC's role in NOAA Research be reexamined in the near future, including exploring

a possible name change. **I am taking this recommendation under advisement and will provide you with my response by March 30, 2002.**

Strategic Planning

Several reviewers' comments point to the need for CDC to write a strategic plan. Addressing many of the issues covered in the review letters would be eased if a "roadmap" for the center existed that clearly articulates priorities. I believe this is the most critical recommendation coming from the panel, and my comments to you will largely revolve around this activity.

Strategic planning is particularly important for organizations like CDC that are capable of moving in many directions, but do not have enough resources to pursue them all. The center has begun to build its expertise beyond its traditional area of seasonal-to-interannual variability because it has seen new opportunities. I am concerned that CDC thinks through the implications of these new opportunities. For example, the center must identify pathways through NOAA and mechanisms for a hand-off to operations in order to remain focused on research. This hand-off issue is noted several times in review letters and it is one that we need to heed. We cannot allow CDC's research to, as one reviewer noted, "back into" an operational mission because we have not done a good job at planning for transition. To deal with these issues, it would be helpful for CDC to formalize their strategic planning. **Please provide me, no later than March 30, 2002, with a strategic plan that describes CDC's scientific, partnering, and staffing priorities and plans for the next five years. This should be a guidance document only - not a full implementation plan - that outlines the domain of CDC's science endeavor. While the center is competent in several areas, CDC should be discriminatory in its approach to managing its research dollars, and the new plan should reflect this. Once the plan is completed, I will review it and discuss with you any issues that remain a concern.**

Scientific Priorities

One of the key issues that should be clarified in the strategic plan is CDC's scientific priorities. I realize that CDC research could potentially take a number of different paths in the future and that this is a primary concern for the center. The general topic of research priorities receives varying responses and recommendations from the reviewers.

For example, on the topic of temporal range, one reviewer states that CDC's strategy of pursuing research over disparate time scales is detrimental to its ambition to become CPC's counterpart for seasonal-to-interannual forecasting. However, as another panelist mentions, the center's focus on the tropics' role in climate and weather predictability has potentially positioned it to study aspects such as the weather-climate connection. In building this subseasonal side of the house, CDC has moved to fill an important gap that no other part of NOAA Research has to date. In fact, CDC's potential involvement in

The Hemispheric Observing System Research and Predictability Experiment (THORpex), is one example raised by a panelist of a new opportunity that had not been considered by the center. Still others mention that on the decadal to centennial timescales, CDC should exploit its potential in this area and participate in more external activities than it currently does. Opportunities mentioned include the international Climate Variability and Predictability program, the Intergovernmental Panel on Climate Change and U.S. Global Climate Research Program National Assessment activities.

There are some critical remarks from the panelists regarding CDC's nearly exclusive focus on the tropical-extratropical connection to seasonal variability. Two reviewers encourage CDC to consider addressing the research imbalances it has allowed to proliferate, particularly the lack of emphasis on the polar regions.

Three reviewers remark on the research on western water issues as being highly innovative and responsive to needs. However two of them choose this as the example to give of a project for which CDC has failed to find a transition path in NOAA. Making outside customers dependent upon experimental products is an unsustainable position for any research organization. Finding a way to hand off the results of this research as it matures will be critical.

Three research foci mentioned by one or more reviewers as areas that should be strengthened in the future are land-atmosphere coupling; climate feedbacks; and clouds, radiation and hydrologic processes. Your strategic planning activity should help you to re-evaluate the level of emphasis you currently place on these foci to determine if they require a more prominent place in the center.

The disparate remarks on scientific direction given by the panel indicate the need for CDC to concentrate energies over the next few months on fashioning a clear strategic plan. The range of activities on the table seems too broad compared with CDC's resources. Guidelines should be set in this process to assist in decision-making and I expect all of the above panel comments on scientific priorities will be considered.

Partnerships and Links to Exterior Entities

The panel recognizes several of the natural links that CDC should be making or strengthening with the rest of the climate community. All felt that CDC has emerged as a key player in providing seasonal-to-interannual forecasting diagnostics, and that to maximize its utility to NOAA, these links are critical.

Some of the stronger recommendations from the panel are regarding CDC's ties to the NOAA's Climate Prediction Center (CPC) and the Geophysical Fluid Dynamics Laboratory (GFDL). One panelist suggests formal structural connections now be made with CPC and GFDL as a kind of 'triumverate'; others suggest just more informal collaborations among the three. Three panelists note the monthly conference calls

with CPC that were begun in May 2001 as a step in the right direction. Reviewing the impact that several months of these calls have made on forecasts and on the feedback loops between research and operations will reveal information about their effectiveness. The observation of one panelist that GFDL, as NOAA's basic research capability in climate model development, and CDC, as NOAA's expertise in a range of climate diagnostics, should have closer ties is becoming more apparent. As you know, NOAA Research Headquarters has supported increased collaborations between CDC and GFDL in the recent past and some headway in that regard has been made.

Apart from these links, all reviewers suggest specific institutions with which CDC should increase scientific collaborations. Two reviewers mention improving relations with the National Center for Atmospheric Research, NASA, and the IPCC; one mentions integrating more with other OGP programs, and developing relationships similar to the CDC/CPC relation with other parts of the National Centers for Environmental Prediction, such as the Hydrometeorological Prediction Center.

Pending the results of CDC's strategic planning activity, I expect the critical partnerships that will need to be formed or strengthened will be apparent and CDC can better respond to these recommendations then.

Computing Capabilities

All four panel reviewers express concern over the lack of computing resources available to CDC. One reviewer also states concern over the highly centralized computing system at the center, and also suggests that a high-end supercomputer center be made available for remote use by NOAA scientists and NOAA-supported university principal investigators.

I am aware of the difficulty in shifting CDC base funds to either expand internal resources or to purchase time on external supercomputers. This is a priorities issue to be addressed in the CDC strategic plan.

Employees

All four reviewers note concerns with the employment of scientists at the center. CDC has a unique arrangement with the Cooperative Institute for Research in Environmental Sciences (CIRES), with the vast majority of your employees being from the University of Colorado. While the arrangement worked well when CDC was small and its workforce relatively young, the panel points out that many of the former post-docs are now seasoned professionals looking for more steady, better-paying work.

This is an important issue across NOAA Research. In fact, it is on the agenda for the Senior Research Council meeting in January. However, the problem is particularly acute at CDC because of the makeup of the center. As this should be a top priority for you, it

should be discussed in the CDC strategic planning exercise and handled in the strategic plan. You should consider the pros and cons of the CDC model (as joint NOAA entity and university entity) and explicitly state why you believe the mix of federal employees/CIRES employees is the optimal avenue for carrying out the CDC mission.

CDC's MOU

One reviewer's comment regarding the need to update CDC's 1993 MOU and Terms of Reference is timely. Once CDC's strategic plan is completed, you should reexamine these documents to make necessary updates.

I again congratulate you on a successful and well-orchestrated review. If you have any questions regarding this memorandum, my recommendations, or any other CDC/Headquarters issues, please contact your laboratory liaison, Kristen Koch. She can be reached at (301) 713-2465 ext 144 or e-mail kristen.c.koch@noaa.gov. Please also distribute this report as well as any followup materials throughout CDC to further aid communication between CDC and NOAA Research Headquarters.